

## Agricultural Economy

# Exchange Rate Indexes & U.S. Ag Trade

The value of the dollar has increased sharply in the last several years. Between April 1995 and September 2000, the U.S. real agricultural trade-weighted exchange rate (based on bilateral exchange rates weighted by share of exports) appreciated by 25 percent, reversing about 10 years of a declining dollar value. In addition, the U.S. dollar has appreciated even more against currencies of trade competitors, making U.S. producers less competitive in world markets. Between April 1995 and September 2000, the U.S. dollar appreciated 42 percent relative to currencies of U.S. competitors.

The exchange rate—the price of a currency in terms of another currency—is arguably the single most important variable in determining the economic environment for trade sectors. Exchange rates affect trade by determining the relationship between international and domestic prices. Changes in the real (inflation-adjusted) exchange rate result in the raising or lowering of prices of U.S. goods in local currency terms around the world. An appreciating dollar raises the price of U.S. goods on the international market, while a depreciating dollar lowers these prices. Exchange rate movements are particularly important for agriculture sectors in countries like the U.S., where exports account for a major portion of agricultural production.

Historically, movements in exchange rates have accounted for approximately 25 percent of the change in U.S. agricultural export value. Other factors, such as the income growth rate in developing countries, the growth and productivity of foreign agriculture sectors that compete with the U.S., and weather conditions accounted for much of the rest. But in the last 5 years, the appreciation of U.S. dollar has become a handicap for U.S. agricultural exports.

Continuing appreciation has allowed competitors to gain market share and in turn expand their production. Losses in U.S. market share may have been even greater if low world prices had not deterred growth in foreign production.

A major event contributing to appreciation of the dollar was the 1997-99 international financial crisis. As countries in Asia and elsewhere experienced the crisis, their economies contracted sharply while the U.S. economy continued to expand rapidly. The differential between the robust growth of the U.S. economy and slow or negative growth in other countries led to large inflows of capital into the U.S., generating demand for dollars that simultaneously appreciated the dollar and depreciated local currencies around the world.

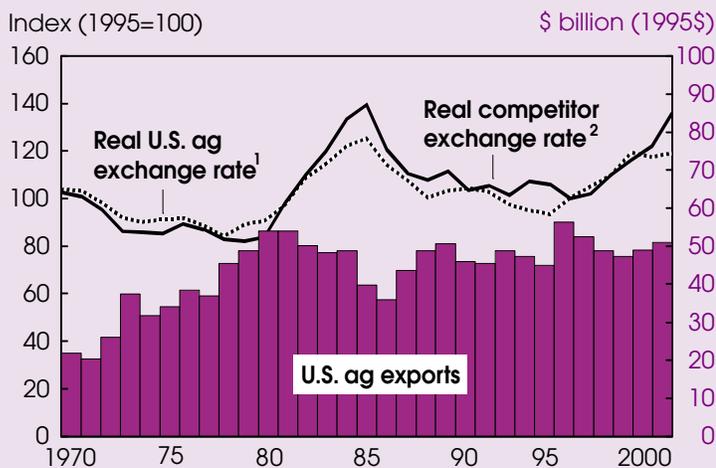
This recent period of appreciation has been a major contributor to lower U.S. agricultural exports in recent years. From a peak of nearly \$60 billion in fiscal 1995, U.S. agricultural exports declined to \$49 billion in 1999. World demand is improving, though, and U.S. exports are forecast at \$53 billion in 2001, up from \$51 billion in 2000.

Appreciation of the dollar was a major factor in the 2-percent decline in global share of all U.S. agricultural exports between 1992 and 1998. The export performance of specific U.S. goods, however, varied depending on the relative exchange rate movements of competitors and importers and on specific foreign market conditions. U.S. wheat's market share, for example, lost 10.5 percentage points between 1992 and 1998. The global market share of U.S. corn declined by about 3 percentage points over the same period. In contrast, the global market share of fresh and frozen U.S. poultry exports increased over 8 percentage points between 1992 and 1998. The export market share of U.S. cotton increased 1.6 percentage points during this period.

Exchange rates can be used to assess shifts in the competitiveness of U.S. agricultural products as the value of the dollar changes relative to other currencies. Bilateral rates measure the value of the dollar against another currency. These are helpful in understanding what affects exports to particular markets. The "value" of the dollar becomes more complex when considering overall U.S. agricultural exports or even a single commodity—each commodity is generally exported to several countries. The analyst needs a measure of value that accounts for the dollar's performance against currencies of the countries that are important in trade of a specific commodity. In economics, such a measure is referred to as an effective exchange rate index, which takes weighted averages of several bilateral exchange rates and combines them into a single index. (*Agricultural Outlook's* Table 26 presents indexes of trade-weighted exchange rates. The database is available at: <http://usda.mannlib.cornell.edu/data-sets/international/88021/>)

*Market and competitor* weighting schemes are the two most frequently used when calculating indexes for trade analysis. For market indexes, the weights are shares of U.S. exports for a particular commodity. For competitor indexes, weights are country shares of world exports (excluding U.S. exports) for a particular commodity. Both

### U.S. Ag Exports Remain Below Mid-1990's Peak As Dollar Strengthens



Total U.S. exports, 2000 preliminary.

1. Index of bilateral U.S.-dollar exchange rates (U.S.-export market countries), adjusted for inflation and weighted by country shares of U.S. exports.

2. Index of bilateral U.S.-dollar exchange rates (U.S.-competitor countries), adjusted for inflation and weighted by countries' export shares of world exports (excluding U.S.).

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market and competitor indexes are constructed so that an upward movement indicates a rise in the dollar's value and a subsequent loss of price competitiveness for U.S. exports.

For example, the U.S. cotton *market index* reflects the overall level of the dollar relative to currencies of U.S. cotton importers. The U.S. cotton *competitor index* reflects the overall level of the dollar relative to currencies of U.S. competitors in the world cotton market. Between 1970 and 2000, foreign cotton exporting countries

### Exchange Rate Terms

**Currency appreciation (depreciation).** Occurs when one currency declines (increases) relative to another. Appreciation implies that one currency become more valuable relative to another and hence less is required in exchange for the other currency. Thus, depreciation of the euro over the past year means more euros are needed to buy dollars.

**Devaluation.** Occurs when a government decides to reduce the value of its currency relative to others.

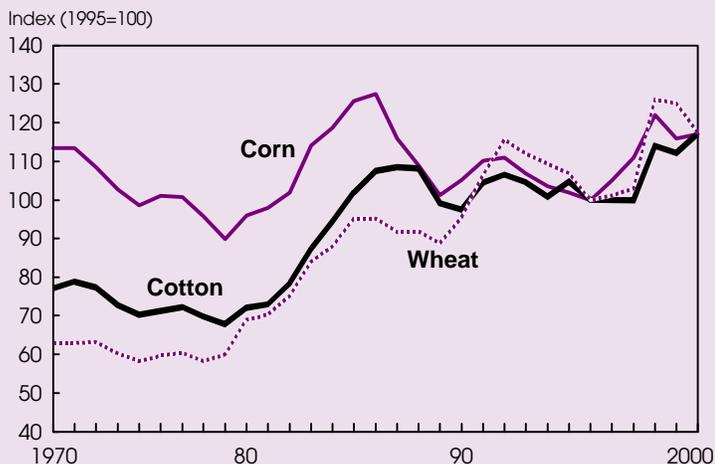
**Effective exchange rate.** Another term for the total trade-weighted exchange rate.

**Exchange rate.** Rate at which one currency trades for another.

**Real exchange rate.** The nominal exchange rate adjusted by relative rates of inflation as measured by consumer prices indexes. Thus, the real China yuan is equal to the nominal yuan worth approximately \$0.12 (November 17, 2000), times the ratio of the US CPI and China CPI measured at some common base year such as 1995. This yields a real 1995 yuan of \$0.125.

**Trade-weighted exchange rate.** A weighted-average index of bilateral exchange rates between trade partners using trade volumes as weights. Usually shares of either exports or imports are used as weights, but sometimes exports and imports combined can be used as weights.

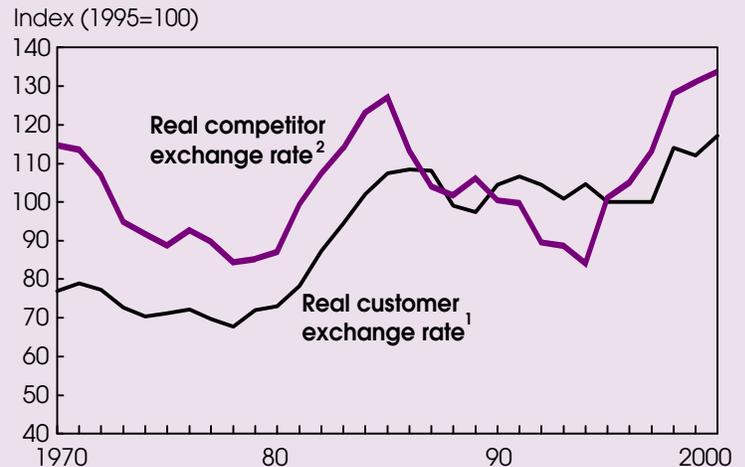
### Value of Dollar Against Currencies of U.S. Export Markets Varies by Commodity



Index of bilateral rates (between U.S. dollar and currencies of U.S. markets), adjusted for inflation and weighted by countries' share of U.S. exports. 2000 preliminary.

Economic Research Service, USDA

### Value of Dollar Has Risen for U.S. Cotton Exporters



2000 preliminary.

1. Index of bilateral U.S. -dollar exchange rate (U.S. -export market countries), adjusted for inflation and weighted by country shares of U.S. cotton exports.
2. Index of bilateral U.S. -dollar exchange rates (U.S. -competitor countries), adjusted for inflation and weighted by countries' export shares of world cotton exports (excluding U.S.).

Economic Research Service, USDA

maintained their competitiveness with low-valued currencies relative to the U.S. dollar, except in 1987-94.

Weights for individual indexes depend on performance in countries that are important for trade in that commodity. For cotton, China accounts for the largest share of U.S. exports at 25 percent (north-east Asia accounts for 54 percent). Nearly 60 percent of U.S. corn exports go to northeast Asia, with Japan accounting for 30 percent. Exports of U.S. soybeans are shipped mostly to Europe (40 percent) and northeast Asia (37 percent). U.S. rice exports are less concentrated: to Europe (26 percent), Latin America (18 percent), Mexico (9 percent), Canada (8 percent), and to North Africa/Middle East (13 percent). Because of the size of their market shares, bilateral exchange rates of these nations and regions are the most significant components of the respective commodity trade-weighted exchange rate indexes.

Variations in these market shares lead to different trends in trade-weighted exchange rates across commodities and commodity groupings. For instance, long-term exchange-rate patterns for wheat, corn, and cotton have been quite different due to differences in destination countries—major wheat markets are Asia and North Africa, major corn markets are Asia and Mexico, and major cotton markets are Asia and Latin America. Long-term appreciation in the wheat exchange rate may be one factor in the long-term stagnation of U.S. wheat exports. Also, trade-weighted exchange rates for bulk commodities and processed intermediate products have more closely tracked overall U.S. agricultural exchange rates than have those for horticulture and processed products and high-value processed products. **AO**

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